

**The Essential 3:  
National Mathematics Advisory Panel: Major Topics of School Algebra  
Professional Development Lesson**

Topics of Algebra

<b>Related Resources</b>	Bradley Witzel (32 video clips) Instructional Innovations Unit Website Doing What Works Website	
<b>Materials Needed</b>	Pencils, small groups, chart paper, each participant will need a copy of the power point handouts and the handouts. The presenter will need this lesson, the power point presentation: <i>The Essential 3: National Mathematics Advisory Panel: Major Topics of School Algebra</i> , and presenter notes for that power point prepared ahead of time.	
<i>Step</i>	<i>Description</i>	<i>Time</i>
<b>Introduction</b>	Use slide #1-3 which includes an icebreaker activity (use if appropriate for your group)	5 min.
<b>Visual Diagram</b>	Slide #4	1 min.
<b>Multimedia Overview: National Mathematics Advisory Panel</b>	Slide #5: Use the video to introduce Major Topics of School Algebra	3:25 min.
<b>Multimedia Overview: School Algebra Topics</b>	Slide #6: Use this multimedia overview to learn about the recommended algebra topics, the importance of making connections across topics, and helping students learn algebra.	7:08 min.
<b>Compare</b>	Slide #6: Use Handout #1 (MT standards) In small groups compare MT standards with the major topics NMP recommends.	5 min.
<b>Share</b>	Slide #6: Where are these recommendations taught?	1-2 min.
<b>Think-Pair-Share</b>	Slide # 7: What are barriers teachers have for teaching algebra?	1-2 min.

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<b>Video: Dr. Wu “What Algebra Teachers Need to Know”</b>	Slide # 7: Listen to Dr. Wu talk about the importance of helping teachers develop a deep understanding of their subject matter and the need to focus instruction on the most critical aspects of algebra and emphasize the connections among topics.	5:46 min.
<b>Review and discuss</b>	Review Slides #8-10: Key Concepts	3-5 min.
<b>Small group discussion</b>	Slide #11: Using Handout #2: <i>Algebra 1 Initial Units</i> , ask what do you notice about the essential questions from this sample? How do they compare to the level of questions you ask your students? How do you currently organize your units of study?	5-7 min.
<b>Audio clip: Expert Interview: District Perspective on Algebra</b>	Slide #12: The district mathematics coordinator describes the process of establishing essential algebra standards and aligning expectations with end-of-course and interim assessments.  Ask participants to take write down any ideas they want to remember from this audio clip.	5:47 min.
<b>Share</b>	Slide #12: Quickly ask participants to share what they wrote down.	1-3 min.
<b>Preview and Discuss</b>	Slide #12: Preview and consider the use of Handout #3: <i>Topics of Algebra Review</i> . Allow staff time to preview and small group discussion.	6-8 min.
<b>Share</b>	Slide #12: Ask: How can Handout #3 be used?	2-3 min.

<b>Think-Pair-Share</b>	<p>Slide #12: Have participants scan handout #4: <i>Learning From Algebra Teaching Peers</i>, to understand how algebra teachers can use this observation tool to learn from other teachers and determine which practices might be adaptable to their own teaching.</p> <p>Discuss with your right shoulder partner how this tool could be used in your district. What are some pros to using a tool like this? What might be some barriers to the use of this type of tool? How might you implement this tool?</p>	10-15 min.
<u>Multiple Paths</u>		
<b>Related Resources</b>	Bradley Witzel (32 video clips) Instructional Innovations Unit Website Doing What Works Website	
<b>Materials Needed</b>	Pencils, small groups, chart paper	
<i>Step</i>	<i>Description</i>	<i>Time</i>
<b>Multimedia Overview: Multiple Pathways to School Algebra</b>	Slide #13: Watch this multimedia overview to learn more about the importance of expectations that all students will learn algebra and the various curricular approaches that enable teachers to respond flexibly to a range of student levels and abilities.	7:17 min.
<b>Explain</b>	Slide #14: Read slide that summarizes that multiple paths of learning algebra will allow all students to learn algebra	1-2 min.
<b>Review and Discuss</b>	Slides #15-17: Key Concepts	3-5 min.
<b>Think-Pair-Share</b>	Slide #18: Think of barriers for students to learn algebra, pair, and share. Write shared comments on chart paper.	2-3 min.

<b>Video: Instructional strategies for struggling Algebra Students</b>	Slide #18: Dr. Grossen tells about practical ideas for working with students who are struggling with algebra, focusing on weaving together instruction in preparatory skills along with algebra concepts. Have participants write down strategies Dr. Grossen refers to on a sheet of paper.	6:41 min.
<b>Presentation: Helping Struggling Learners in Algebra</b>	Slide #19: Hear ideas from teacher, Sally Collins, for overcoming students' lack of preparation for algebra.	6:19 min.
<b>Discuss</b>	Slides #20-22: Discuss the questions from these three slides.	15-20 min.
<b>Review</b>	Slide #23: Handout #5: <i>Algebra Pathways Inventory: Working with Struggling Algebra Students</i> .	3-4 min.
<b>Discuss in small groups</b>	Slide #23: Handout #5 Ask: How can you use this inventory? (If your purposes are to build an inventory at this PD session have participants list or highlight items on the inventory they want included in their school's/district's inventory.)	10-15 min.
<b>Share</b>	Slide #23: Share out regarding handout #5	5-7 min.



## Major Topics of School Algebra

Trainer of Trainers Module  
Montana Office of Public  
Instruction



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## Group Norms

Listening: SLANT  
Cell phone reminder  
Conversations  
Breaks



Bathroom location



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## Activity

- Think about an adjective that describes you that begins with the same letter your first name begins with
- Share with the group one at a time around the room



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## The Major Topics of School Algebra

The National Mathematics Advisory Panel Report identifies the major topics of school algebra.

### Selected Major Topics\*

- Symbols and Expressions**
  - Polynomial and rational expressions
  - Arithmetic and finite geometric series
- Linear Equations**
  - Real numbers as points on the number line
  - Linear equations/inequalities and their graphs
  - Systems of simultaneous linear equations
- Quadratic Equations**
  - Factoring/factoring of quadratic polynomials
  - Completing the square in quadratic expressions
  - Quadratic formula
- Functions**
  - Linear, quadratic, and polynomial functions
  - Nonlinear functions (in  $\mathbb{R}$ , square and cube root functions; absolute value; step functions)
  - Exponential, logarithmic, and trigonometric functions
- Algebra of Polynomials**
  - Roots and factorization of polynomials
  - Complex numbers and operations
  - Fundamental theorem of algebra
- Combinatorics and Finite Probability**
  - Applications of the binomial theorem and Pascal's Triangle

### Practice 1: Topics of Algebra

- Teach for understanding of topics of school algebra
- Make linkages among topics
- Develop problem-solving skills
- Enhance teacher understanding
- Address misconceptions in learning algebra

### Practice 2: Multiple Paths

- Establish a course sequence to cover all topics of school algebra
- Provide multiple curricular pathways to ensure success
- Ensure that students are ready for algebra before enrolling them in algebra courses
- Provide opportunities for all students to learn school algebra
- Use the topics of school algebra to inform standards, instructional materials, and assessments

\*For a complete list and the full report, please see [www.nap.edu/catalog/10867.html](http://www.nap.edu/catalog/10867.html)

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## Multimedia Overview:

### National Mathematics Advisory Panel



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## Topics of Algebra

- Symbols and Expressions
- Linear Equations
- Quadratic Equations
- Functions
- Algebra of Polynomial
- Combinatorics and Finite Probability



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## Barriers to teaching Algebra

Think-Pair-Share



Video: What Algebra Teachers Need to Know  
Discussion



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## Key Concepts

- Build understanding of major algebra topics and connections: symbols and expressions, linear and quadratic equations, functions, algebra of polynomials, combinatorics and finite probability.
  - Classroom instruction must focus on the major topics of algebra recommended by the National Math Panel. Teachers need to make connections across topics and help students understand these connections and build proficiency in these topics.



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## Key Concepts

- Develop students' proficiency in solving problems, which includes problem formulation, problem translation, transformation of equations, and explanation of the steps in problem solving.
  - Students must be proficient in problem-solving skills to achieve success in algebra. Teachers need to provide students with many opportunities to practice problem formulation, translation, and transformation of equations so they can be efficient in solving algebra problems. In addition, students must have experiences with explaining the steps they take to solve problems.



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## Key Concepts

- Enhance teacher understanding of the topics of algebra, the links among those topics, and how to teach those topics, including strategies for addressing student misconceptions in learning algebra.
  - Teachers must understand the mathematics they teach. It is essential that they make connections across topics for students and understand common student misconceptions in order to anticipate where students need additional preparation, practice, and explanation.



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## Sample

- Algebra I Initial Units...What do you notice about the “essential questions” from this sample?
- How do they compare to the level of questions you ask your students?
- How do you currently organize your units of study?

Handout #2/Think-Pair-Share



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## District Perspective on Algebra



Audio clip/Handout #3 and #4/Think-Pair-Share



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## Multiple paths to ensure that all students succeed

Expect that all students will learn school algebra through a coherent progression of topics



Ms. Bracket presentation

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## Multiple Paths

Schools should expect that all students can learn algebra; students who are preparing for college or technical careers should master the topics of school algebra typically addressed in Algebra I and Algebra II courses.

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## Key Concepts

- Establish district-wide expectations for a sequence of courses that encompass all school algebra topics.
  - It is essential that all of the topics of school algebra recommended by the Panel are addressed in traditional Algebra I and II and integrated mathematics courses. No matter what the multi-grade sequence of the major topics, algebra instruction needs to incorporate and emphasize the connections between and logical progressions among the topics.

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## Key Concepts

- Ensure that there is alignment across the major topics of school algebra with content standards, teaching materials, instructional strategies, and assessments.
  - All secondary students should have the opportunity to master the topics typically included in traditional discipline-based Algebra I and Algebra II courses. School districts need to establish alignment across algebra topics, content standards, and assessments. In the classroom, teachers need to use instructional materials and strategies aligned with the topics.



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## Key Concepts

- Ensure that there is a foundational level of preparation and multiple paths for students to succeed in school algebra.
  - Students need adequate preparation in arithmetic to succeed in algebra. The expectation that all students can be successful in learning algebra is fundamental; however, teachers should not assume that all students have the same level of preparation in the principles of arithmetic and basic concepts necessary for learning algebra. Algebra courses should allow for differentiated instruction. Some students may need additional instruction and practice, while others are ready to work at an accelerated pace. Teachers need to understand how students learn to solve equations and word problems and recognize common sources of errors and conceptual misunderstandings.



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## Barriers for students to learn Algebra

Think-Pair-Share



Video: Instructional Strategies for struggling Algebra Students  
Discussion



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## Helping Struggling Learners in Algebra



Video



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### Discussion

- *Why is algebra considered the gatekeeper for future course-taking?*
- *What does mastery look like in student performance for each of the topics?*
- *What foundational content pieces are needed for students to be successful in algebra?*



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- *How do you prepare students to think abstractly as required in algebra?*
- *What are some misconceptions students have with algebra topics?*
- *How do you address those misconceptions?*



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- What strategies are helping struggling students attain success?
- What are the “lateral” options for students who experience difficulty?
- What are the options for advanced students?




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## Algebra Pathways Inventory: Working With Struggling Algebra Students




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## Additional Resources

- Bradley Witzel video clips (32 total)  
Available on the Instructional Innovations website
- Doing What Works: Many additional videos, tools, and templates




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## References/Resources

- Doing What Works: <http://dww.ed.gov/>
- National Mathematics Advisory Panel Final Report:  
<http://www2.ed.gov/about/bdscomm/list/mathpanel/report/final-report.pdf>
- Montana Office of Public Instruction Content Standards:  
<http://www.opi.mt.gov/Curriculum/Index.html>



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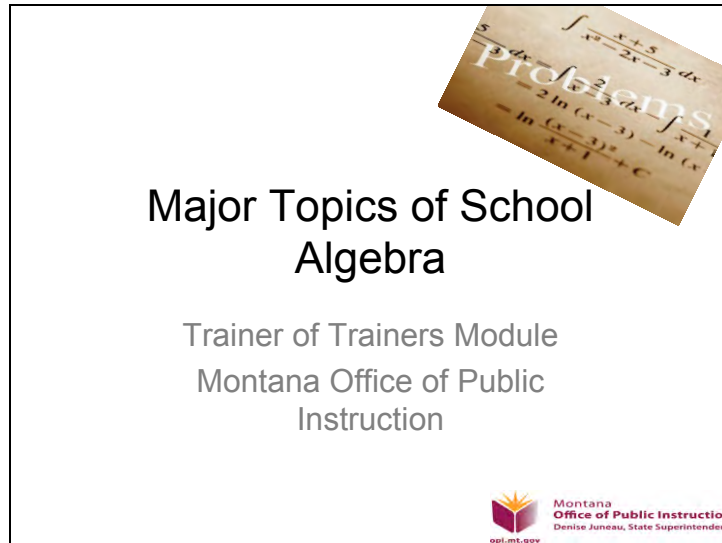
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Introduce yourself and the module

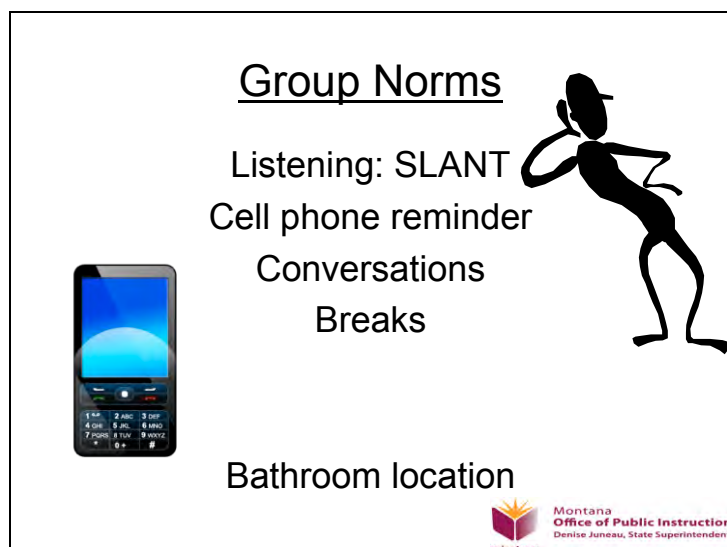
Say: This Train the Trainer Module is designed for secondary math: Major Topics of School Algebra

As we work today I will be using a signal to let you know when discussion time is ending and that I need your attention up front.

Do: Model/practice signal you will use to bring the group back together after small group discussions and activities (ex: count down, hand raise, cue word).

No media needed

No handouts needed



Describe SLANT: Have participants locate this routine card in their materials

**S** = Sit up (good posture keeps you alert)

**L** = Lean forward (this shows interest to your speaker)

**A** = Ask questions (do this by raising your hand, putting the questions in your notes,  
and to yourself)

**N** = Nod your head (or else shake your head, or show your understanding or confusion  
in some other  
way)

**T** = Track your speaker (keep your eye on the speaker to take in important non-verbal  
clues and to stay alert and interested)

Give a quick reminder to have cell phones on silent mode



Discuss that conversations should be limited to partner or small group discussions as sidebar conversations can be distracting to those around you.



Go over when the scheduled breaks will be and where the restrooms are located.

No media

No handouts

### Activity

- Think about an adjective that describes you that begins with the same letter your first name begins with
- Share with the group one at a time around the room



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Read the slide to introduce the icebreaker activity.

Give examples: Dedicated Debbie, Gleeful Gwen, Kind Kathi...

Move quickly around the room and give feedback like nodding and restating adjective-names...) to make participants feel comfortable.

Say

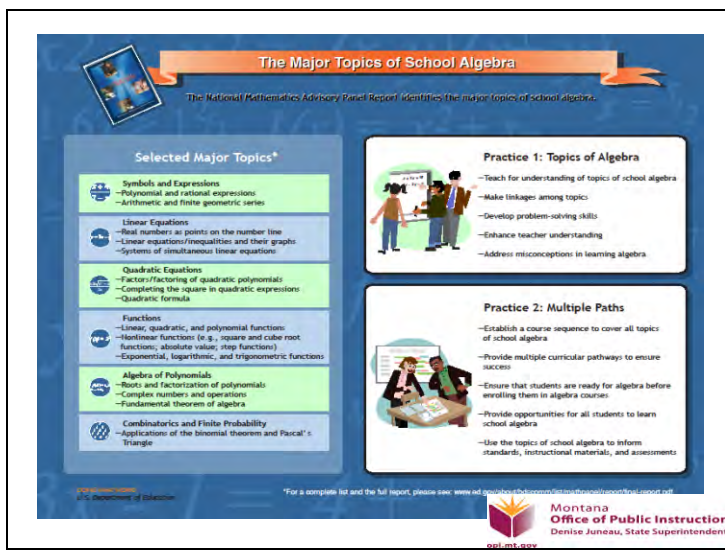
Before we move into our module, you have in your binder an appointment sheet/clock. At times we will be using this to partner for discussions.

You will need to introduce yourself , choose a time to discuss, write your name on your partner's clock and he/she writes his/her name on your sheet for the same time. When you are done you will have made 4 appointments.

Please take 3 minutes to get up and make appointments with someone in the room-try to make an appointment with someone you don't know-mix it up.

No media

No handout



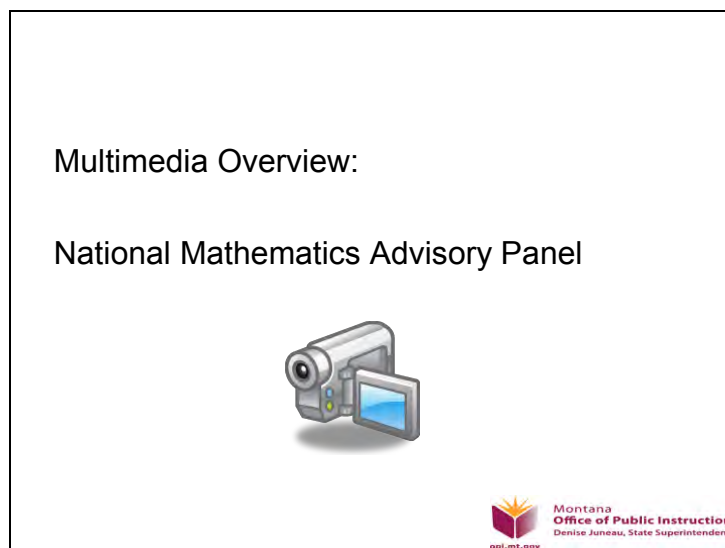
Say: This visual diagram illustrates two algebra practices based on the findings and recommendations presented in the National Mathematics Advisory Panel report.

You have a larger copy of this slide in your handouts for easier viewing.

Take just a minute to scan this diagram.

Media is imbedded in power point: *The Major Topics of School Algebra* Visual Diagram

No handouts



Say:

Watch this brief overview to learn about the purpose and findings of the National Mathematics Advisory Panel and research-based recommendations for improving mathematics instruction.

Find out why it's important for schools to focus on teaching critical mathematics skills to better prepare students for entry into algebra.

Ask: Why is it important for schools to focus on teaching critical mathematics skills to better prepare students for entry into algebra? (allow 1 min.)



Media needed: *National Mathematics Advisory Panel* Multimedia Overview (3:25 min.)

No handouts

### Topics of Algebra

- Symbols and Expressions
- Linear Equations
- Quadratic Equations
- Functions
- Algebra of Polynomial
- Combinatorics and Finite Probability

Activity/Discussion/Handout #1



Introduce the multimedia overview video:

Say: In this video we will watch an overview to learn about the recommended algebra topics, the importance of making connections across topics, and helping students learn algebra (7:08min.)

Activity:

Introduce activity by grouping participants (about 4 per group):

Say: For this activity each group will need H.O. #1 MT standards (pgs. 16-17, 20-21 of Montana K-12 Content Standards Frameworks) and we will use this slide for you to view the six major topics in algebra recommended by the National Mathematics Advisory Panel.



In your small groups I would like for you to look over the MT Standards and compare them with the six major recommended topics of algebra. (allow 3-5 min.)

Media: *School Algebra Topics* multimedia overview (7:08 min.)


Handout #1: MT Standards (pgs. 16-17, 20-21) of *Montana K-12 Content Standards Frameworks*

## Barriers to teaching Algebra

Think-Pair-Share



Video: What Algebra Teachers Need to Know  
Discussion



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Ask participants to **Think** about barriers teachers may have to teaching algebra (allow 30-45 seconds)

have them **Pair** with their right shoulder partner (allow 30-45 seconds),  
and then ask for barriers to be **shared** with the group.

Write these on chart paper.

Say:

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Now let's watch this video, "What Algebra Teachers Need to Know." Listen to Dr. Wu talk about the importance of helping teachers develop a deep understanding of their subject matter and the need to focus instruction on the most critical aspects of algebra and emphasize the connections among topics.

Ask:

How did what our group identified as barriers compare to those Dr. Wu identified in this video clip?

Media needed: *What Algebra Teachers Need to Know* Dr. Wu Interview (5:46 min.)

No handouts

## Key Concepts

- Build understanding of major algebra topics and connections: symbols and expressions, linear and quadratic equations, functions, algebra of polynomials, combinatorics and finite probability.
  - Classroom instruction must focus on the major topics of algebra recommended by the National Math Panel. Teachers need to make connections across topics and help students understand these connections and build proficiency in these topics.



Caution!

Do not read all of this slide:

Point out "Teachers need to make connections across topics and help students understand these connections and build proficiency in these topics."

No Media  
No Handouts

## Key Concepts

- Develop students' proficiency in solving problems, which includes problem formulation, problem translation, transformation of equations, and explanation of the steps in problem solving.
  - Students must be proficient in problem-solving skills to achieve success in algebra. Teachers need to provide students with many opportunities to practice problem formulation, translation, and transformation of equations so they can be efficient in solving algebra problems. In addition, students must have experiences with explaining the steps they take to solve problems.



Again, do not read the slide entirely.

Have participants read this slide to themselves.

Quickly ask for key points. (1-2min)

No Media

No Handouts

## Key Concepts

- Enhance teacher understanding of the topics of algebra, the links among those topics, and how to teach those topics, including strategies for addressing student misconceptions in learning algebra.
  - Teachers must understand the mathematics they teach. It is essential that they make connections across topics for students and understand common student misconceptions in order to anticipate where students need additional preparation, practice, and explanation.

Say:

It's critical that teachers must understand the mathematics they teach.



It is essential that they make connections across topics for students and understand common student misconceptions in order to anticipate where students need additional preparation, practice, and explanation.

No Media

No Handouts

## Sample

- Algebra I Initial Units...What do you notice about the “essential questions” from this sample?
- How do they compare to the level of questions you ask your students?
- How do you currently organize your units of study?

Handout #2/Think-Pair-Share



Have participants turn to Handout #2: Algebra I Initial Units.

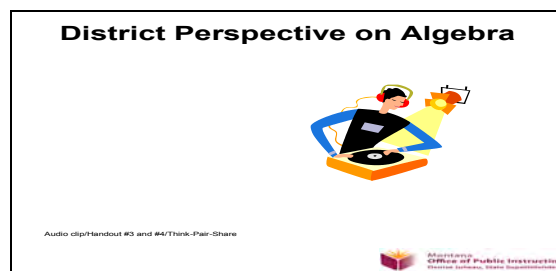
Point out essential questions.

Allow 3 minutes to look over and think about questions from the slide.

Ask participants to share with their left shoulder partner (allow 1 min.), and then ask participants to share with the group.

No Media

Handout #2: *Algebra 1 Initial Units*



Let's hear how teachers in one district worked together to establish essential algebra learnings. (play audio clip)

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Locate Handout #3: *Involve everyone in assessing the current stages of recommended algebra topics in the district.* (hold up to show participants the handout).

Say:

This resource could be used in your school teams to identify your current stages of the recommended algebra topics in your district and help identify an action plan.

Looking at Handout #3, preview this tool to assess the congruence between the National Mathematics Advisory Panel's recommended algebra topics and the standards, curriculum, and assessments currently in use in the district.

This tool includes a grid to help determine the degree of alignment and/or gaps between the Panel's recommended topics and those represented in state/district standards.

Handout #4: Scan handout #4 to understand how algebra teachers can use this observation tool to learn from other teachers and determine which practices might be adaptable to their own teaching.

Discuss with your right shoulder partner how this tool could be used in your district.

What are some pros to using a tool like this? What might be some barriers to the use of this type of tool? How might you implement this tool?

Media: *District Perspective on Algebra* audio clip 5:47 min.

Handout #3: *Topics of Algebra Review*

Handout #4: *Learning from Algebra Peers*

## Multiple paths to ensure that all students succeed

Expect that all students will learn school algebra through a coherent progression of topics



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Introduce this section by saying,

With regard to the Content Literacy Continuum, a framework for guiding the development of school wide literacy services in secondary schools, a focus is that students learn critical content required in the core curriculum regardless of literacy.

This will, most assuredly, require multiple path for algebra success.

Watch this multimedia overview to learn more about the importance of expectations that all students will learn algebra and the various curricular approaches that enable teachers to respond flexibly to a range of student levels and abilities. (7:17 min)

## Multiple Paths

Schools should expect that all students can learn algebra; students who are preparing for college or technical careers should master the topics of school algebra typically addressed in Algebra I and Algebra II courses.



Say:

While different course configurations are possible, the important point is that all the topics of school algebra are addressed.

A common obstacle to solving algebraic equations is inadequate preparation in arithmetic.

Because student preparation is key to success in algebra, teachers of algebra cannot assume a common skill level.

Some students may need additional instruction and extensive practice, while others can work at an accelerated pace.

No Media

No Handouts

## Key Concepts

- Establish district-wide expectations for a sequence of courses that encompass all school algebra topics.
  - It is essential that all of the topics of school algebra recommended by the Panel are addressed in traditional Algebra I and II and integrated mathematics courses. No matter what the multi-grade sequence of the major topics, algebra instruction needs to incorporate and emphasize the connections between and logical progressions among the topics.



Say:

Please read this slide to yourself.

Ask:

What are key ideas from this slide? (allow 2 min)

No media

No handouts

## Key Concepts

- Ensure that there is alignment across the major topics of school algebra with content standards, teaching materials, instructional strategies, and assessments.
  - All secondary students should have the opportunity to master the topics typically included in traditional discipline-based Algebra I and Algebra II courses. School districts need to establish alignment across algebra topics, content standards, and assessments. In the classroom, teachers need to use instructional materials and strategies aligned with the topics.



Do not read this slide in its entirety!

Read the top bullet.

No media

No handouts

## Key Concepts

- Ensure that there is a foundational level of preparation and multiple paths for students to succeed in school algebra.
  - Students need adequate preparation in arithmetic to succeed in algebra. The expectation that all students can be successful in learning algebra is fundamental; however, teachers should not assume that all students have the same level of preparation in the principles of arithmetic and basic concepts necessary for learning algebra. Algebra courses should allow for differentiated instruction. Some students may need additional instruction and practice, while others are ready to work at an accelerated pace. Teachers need to understand how students learn to solve equations and word problems and recognize common sources of errors and conceptual misunderstandings.



Read the top bullet of this slide

Have participants read the next section to themselves.

Ask:

What does this slide tell teachers not to assume?

Does that agree with your observation in your experiences?

How do you differentiate in your classroom for those who additional instruction and for those who are ready for acceleration? (allow 5 min for discussion)





No media


No handouts

## Barriers for students to learn Algebra

Think-Pair-Share



Video: Instructional Strategies for struggling Algebra Students  
Discussion



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Denise Juneau, State Superintendent  
opi.mt.gov

Ask participants to **think** about barriers students may have to learning algebra (allow 30-45 seconds),

have them **pair** with their right shoulder partner (allow 30-45 seconds),  
ask for barriers to be **shared** with the group.

Write these on chart paper.

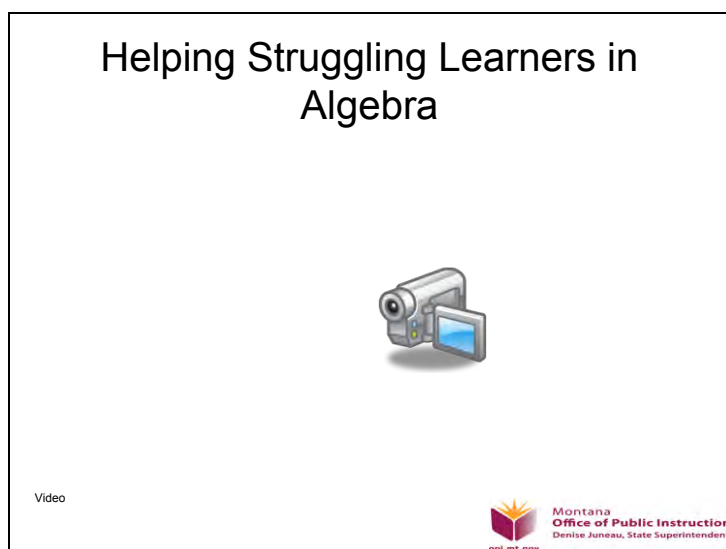
Say:

Now let's watch this video, *Instructional Strategies for struggling Algebra Students*, and listen to Dr. Grossen's practical ideas for working with students who are struggling with algebra, focusing on weaving together instruction in preparatory skills along with algebra concepts. (6:41 min).

As you watch this write down the strategies Dr. Grossen refers to on a sheet of paper.

Media: *Instructional strategies for Struggling Algebra Students* Dr. Grossen (6:41 min.)

No handouts



Say:

Hear ideas from a teacher in Colorado, Sally Collins, for overcoming students' lack of preparation for algebra.

Included are tips for group work, developing algebraic communications, diagnosing misconceptions, contextualizing problems, and developing persistence.

Media: *Helping Struggling Learners in Algebra Presentation* (6:19 min.)

No handouts

### Discussion

- *Why is algebra considered the gatekeeper for future course-taking?*
- *What does mastery look like in student performance for each of the topics?*
- *What foundational content pieces are needed for students to be successful in algebra?*



Start a discussion using the questions on this slide and the next two slides.

Direct participants to use their appointment clock to find their 3 o'clock appointment and discuss the first 2 questions. (allow 5 min.)

## Share

Quickly solicit comments concerning the first two questions (1-2 min.) Assure that the whole group hears comments so you may need to restate what was said.

Have participants locate their 6 o'clock appointment to discuss the 3<sup>rd</sup> question (allow 3 min.)

## Share

Quickly solicit comments concerning the third question (1-2 min.) Assure that the whole group hears comments so you may need to restate what was said.

No media

No handouts

- *How do you prepare students to think abstractly as required in algebra?*
- *What are some misconceptions students have with algebra topics?*
- *How do you address those misconceptions?*

## Continue discussion

Direct participants to use their appointment clock to find their 9 o'clock appointment and discuss the first question. (allow 2 min.)

## Share

Quickly solicit comments concerning the first question (1 min.) Assure that the whole group hears comments so you may need to restate what was said.

Direct participants to use their appointment clock to find their 12 o'clock appointment and discuss the last two questions. (allow 5 min.)

## Share

Quickly solicit comments concerning the last two questions (2-3 min.) Assure that the whole group hears comments so you may need to restate what was said.

No media  
No handouts

- What strategies are helping struggling students attain success?
- What are the “lateral” options for students who experience difficulty?
- What are the options for advanced students?

Discussion continued

No media  
No handouts

## Algebra Pathways Inventory: Working With Struggling Algebra Students



Tell participants to get out Handout #5: *Algebra Pathways Inventory: Working with Struggling Algebra Students*

Say:

Use this self-assessment inventory to consider whether there are adequate practices in place to help students who are struggling in algebra.

Feel free to highlight or use sticky notes to identify areas of need in your school

No media

Handout #5: *Algebra Pathways Inventory: Working with Struggling Algebra Students*

## Additional Resources

- Bradley Witzel video clips (32 total)  
Available on the Instructional Innovations website
- Doing What Works: Many additional videos, tools, and templates



Point out that there are numerous resources found on the IIU website (Bradley Witzel) as well as the Doing What Works website.



No media  
No handouts

## References/Resources

- Doing What Works: <http://dww.ed.gov/>
- National Mathematics Advisory Panel Final Report:  
<http://www2.ed.gov/about/bdscomm/list/mathpanel/report/final-report.pdf>
- Montana Office of Public Instruction Content Standards:  
<http://www.opi.mt.gov/Curriculum/Index.html>



Say:

Much of the media and handouts for this training we made available from the website  
***Doing What Works***

The Doing What Works website is a website dedicated to helping educators implement effective educational practices and includes practice guides developed by the U.S. Department of Education's Institute of Education Sciences.

No media

No handouts